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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,274	03/29/2004	Sean T. Crowley	AMKOR-022CB1	2255
7663	7590	07/10/2006	EXAMINER	
STETINA BRUNDA GARRED & BRUCKER			LE, THAO X	
75 ENTERPRISE, SUITE 250				
ALISO VIEJO, CA 92656			ART UNIT	PAPER NUMBER
			2814	

DATE MAILED: 07/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/812,274	CROWLEY ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Thao X. Le	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 05 May 2006.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 16-21 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-14 and 16-21 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-3, 5-14, 16-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6686649 to Mathews et al. in view of US 6580159 to Fusaro et al.

Regarding claims 1, 13, and 21, Mathews discloses a semiconductor package in fig. 2 comprising: a single non-conductive film layer 102, column 4 lines 31 defining opposed top and bottom film surfaces 102U/102L and a peripheral edge, fig. 1, the film layer 102 including a plurality of vias 116 disposed therein; a plurality of upper leads

110 disposed on the top film surface 102U adjacent respective ones of the vias 116; a plurality of lower leads 114 disposed on the bottom film 102L surface adjacent respective ones of the vias 116, each of the lower leads 114 being electrically connected to a respective one of the upper leads 110; a plurality of transmission line elements 136, column 5 lines 27 and lines 47-52, disposed on the top film surface 102U and electrically connected to at least one of the upper leads 110, fig. 1, at least one semiconductor die 104 attached to the top film surface 102U and electrically connected to at least one of the upper leads 110 and the transmission line element 136, fig. 1, a package body 140, col. 5 line 55, disposed on the film layer 102, the package body 140 encapsulating the semiconductor die 104, the upper leads 110, the transmission line elements 136, and being adhered to the top film surface 102U, fig. 2.

But, Mathews does not disclose the package body 140 extending to the peripheral edge of the film layer 102, and defining a plurality of generally vertical body side surfaces which are substantially coplanar with respective ones of the film side surfaces and a generally horizontally body top surface which is substantially orthogonal to the body surfaces.

However, Fusaro discloses a semiconductor package in fig. 1 and 5 comprises a single non-conductive film layer 17, col. 3 line 45, an upper lead 59 connecting to the lower lead 14, col. 6 line 40, a package body 25, col. 3 line 7, encapsulating the semiconductor die 56, the upper leads 59, extending to the peripheral edge of the film layer 17 and being adhered to the top of the film surface, and defining a plurality of generally vertical body side surfaces 28 which

are substantially coplanar with respective ones of the film side surfaces, and a generally horizontally body top surface which is substantially orthogonal to the body surfaces, fig. 1 or 5. At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the package body teaching of Fusaro with Mathew's device, because it would have created a IC packages that thinner than conventional packages and have improved thermal performance, more reliable, and cost effective as taught by Fusaro in col. 1 lines 46-53.

Regarding claim 2, Mathews discloses the semiconductor package comprising a plurality of transmission line elements 136, fig. 1 column 5 line 50, on the top film surface 102U, the semiconductor die 104 being electrically connected to at least one of the transmission line elements 136.

Regarding claims 3, 5-6, 14, Mathews discloses the semiconductor package wherein the transmission line elements 136 are selected from the group consisting of: an balun, column 5 line 50, and wherein the semiconductor die 104 is electrically connected to the upper lead 110 and to the transmission line element 136 by respective ones of a plurality of bond wires 112, column 3 line 54, wherein at least some of the upper leads 110 each include a conductive trace 110A connected thereto and extending therefrom, the bond wires 112 being used to electrically connect the semiconductor die 104 to at least one of the traces 110A, fig. 2.

Regarding claims 7-8 and 16-17, Mathews discloses the semiconductor package further comprising a plurality of pads (each connection point would have a pad), fig. 2,

disposed on the top film surface and electrically connected to respective ones of the upper leads 110, the pads being arranged in at least one set which is configured to accommodate a passive device 136, wherein the pads are arranged in multiple sets, each of the sets being configured to accommodate a passive device (antenna) 136.

Regarding claims 9, 18, Mathews discloses the semiconductor package wherein the vias 116/126 are segregated into an outer set 126 which extends along and in relative close proximity to a peripheral edge of the non-conductive sheet 102, and an inner set 116 which is disposed within the outer set 126, fig. 2.

Regarding claim 10, Mathews does not disclose the semiconductor package wherein the non-conductive sheet 102 is fabricated from a polyimide film.

But, Mathews discloses the non-conductive film 102 comprises printed circuit board or tape.

In addition, Fusaro discloses the non-conductive sheet 17 is fabricated from a polyimide film, column 4 line 3. At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the non-conductive film teaching of Fusaro in Mathews's device because such non-conductive film is typical in the art as disclosed by Fusaro.

Regarding claims 11-12, 19-20, Mathews discloses the semiconductor package wherein each of the vias 116 is lined or filled with a conductive metal material to facilitate the electrical connection of the upper leads to respective ones of the lower leads, fig. 2.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 6686649 to Mathews et al. and US 6580159 to Fusaro et al as applied to claims 1-3 above and further in view of US Pub 2003/0020502 to Sugihara et al.

Regarding claim 4, Mathews discloses the semiconductor package the lower lead 114, upper lead 110, and the transmission line 136 element each include a conductive material.

But Mathews does not disclose the semiconductor package wherein the lower lead and upper lead and the transmission line element each include a nickel/gold plated thereon.

However, Sugihara discloses a conductive line on the polyimide substrate in fig. 8(a-g) comprising a Cu/Ni/Au. At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the Cu/Ni/Au conductive line teaching of Sugihara with Mathews's conductive line, because it would have prevented reflection from the terminal of the electrical transmission line as taught by Sugihara, see abstract.

### ***Response to Arguments***

5. Applicant's arguments with respect to claims 1-14, 16-20 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

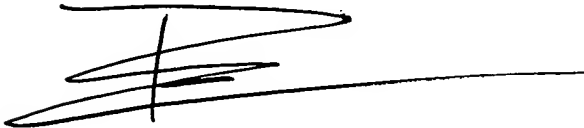
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao X. Le whose telephone number is (571) 272-1708. The examiner can normally be reached on M-F from 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M. Fahmy can be reached on (571) 272 -1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, consisting of a stylized 'T' followed by a horizontal line and a vertical line intersecting it.

Thao X. Le  
29 June 2006